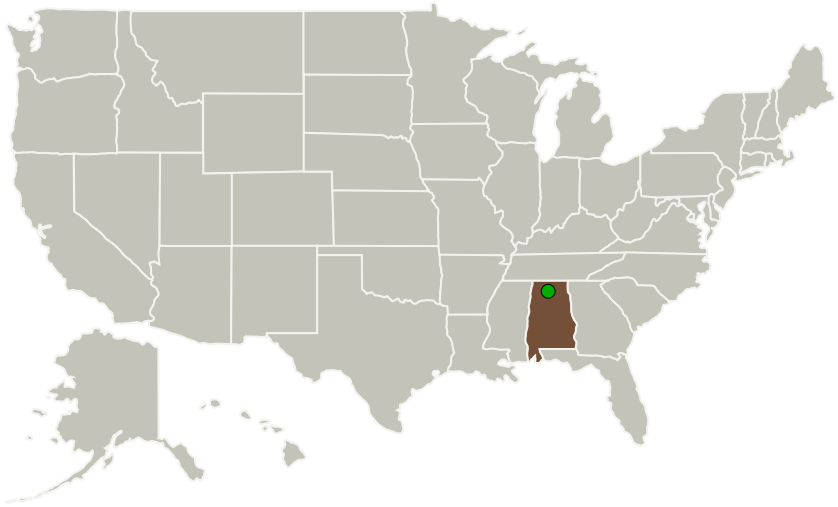
An Additive Manufacturing Technique for the Production of Electronic Circuits, Phase I

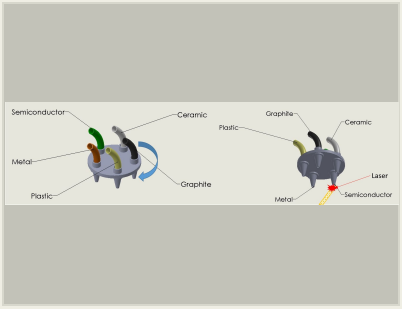
Completed Technology Project (2016 - 2017)

Project Introduction

The proposed 9-month research project aims for the development of additive manufacturing techniques for the creation of electronic devices. It will develop an innovative additive manufacturing technique that combines the ink-based printing with laser melting technology to directly print a three-dimensional (3D) system with built-in electrical properties and functioning as an electronic device. The fundamental electronic device includes the resistor, conductor, semiconductor, insulator and capacitor. This proposed 3D printing technique involves (1) the development of five fundamental ink-based printing materials suitable for conductor, resistor, capacitor, semiconductor and insulator production; (2) the design of the five rotating injectors for five distinct ink-based materials; (3) the development of laser melting technology to provide on-demand melting and solidification of the dispensed ink-based materials; and (4) the evaluation of 3D printing control software.

Primary U.S. Work Locations and Key Partners





An Additive Manufacturing Technique for the Production of Electronic Circuits, Phase I

Table of Contents

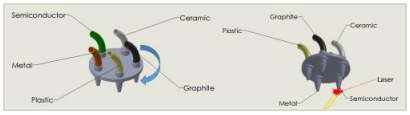
An Additive Manufacturing Technique for the Production of Electronic Circuits, Phase I

Completed Technology Project (2016 - 2017)

Organizations Performing Work	Role	Type	Location
Morningbird Media Corporation	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Madison, Alabama
Alabama A&M RISE Foundation	Supporting Organization	Academia	Normal, Alabama
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations
Alabama

Images



Briefing Chart Image
An Additive Manufacturing Technique for the Production of Electronic Circuits, Phase I
(https://techport.nasa.gov/image/130408)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Morningbird Media Corporation

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

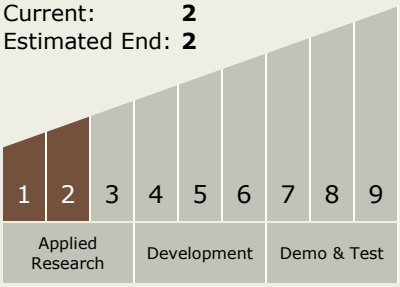
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Chance M Glenn

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



An Additive Manufacturing Technique for the Production of Electronic Circuits, Phase I

Completed Technology Project (2016 - 2017)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.3 Electronics and Optics Manufacturing Process